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CARE AND HANDLING  
FRESH FRUITS AND VEGETABLES  
IN  
RETAIL MARKETS

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## GENERAL CONSIDERATIONS

Fresh fruits and vegetables are living entities even after removal from the parent plant or from their growing medium. Hence, they carry on most of the processes associated with living tissues. From the standpoint of the post-harvest life of fruit and vegetables, respiration and transpiration are the most important. Respiration is the process in which substrates within the product are utilized to provide energy for maintaining life; transpiration is the process of loss of water in the vapor form from the plant tissues. Post-harvest life can be maintained by reducing the rate of water loss by transpiration.

Both processes are greatly influenced by temperature. Generally the lower the temperature, the lower the rate of respiration and transpiration. Most commodities should be kept at temperatures as close to freezing as possible. However, some commodities which usually are of a tropical origin, such as bananas, tomatoes, peppers, cucumbers, etc., are subject to chilling injury at temperatures below about 40° or 50° F.

Relative humidity also affects transpiration. Generally, humidity should be as high as practical except for certain crops such as dry onions, winter squash and pumpkins. High humidity is not easily kept in a retail market display area or in a refrigerated cooler. It can be aided by using humidifiers, wetting down containers or flooding the floor in storage rooms and by sprinkling products with water or crushed ice in display areas. Also some products can be displayed on beds of crushed ice. Care must be taken to prevent leaves from continuously being wet on some crops such as bunched beets, carrots or radishes, as this may cause more rapid leaf decay, especially at high temperatures. Generally, sprinkling with water should only be used when the products are being displayed or stored under refrigeration.

All fresh products should be carefully handled to prevent bruising and skin breaks with promote rapid breakdown. They should also be sorted frequently to remove decayed, damaged or unsightly products.

The following "Optimum Conditions for Handling and Care of Fresh Fruits and Vegetables", table was prepared to provide some helpful information for keeping and displaying fresh produce. Quality sells and repeat customers help sell volume.

### For Additional Information, Consult:

"The Commercial Storage of Fruits, Vegetables, and Florist and Nursery Stocks" U.S.D.A. Handbook No. 66, 1968.

"The Shelf Life of Fresh Fruits and Vegetables - Retail Store Display Cases" U.S.D.A. H.T.&S. Office Report No. 247, October 1951.

"Fresh Fruits and Vegetables - Handling and Care" Cooperative Extension Service, Michigan State University.

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OPTIMUM CONDITION FOR HANDLING AND CARE OF FRESH FRUITS AND VEGETABLES, CONTINUED

Produce	Ideal Storage Conditions		Sell Quickly (1-2 Days)	Care in the Display Rack		
	Temperature (°F.)	Relative Humidity (%)		Refrigerate (40°F.)	Sprinkle With Water	Special Notes
Onions, Green	32	90-95	Yes	Profitable	Yes	Keep well ventilated
Oranges	34-38	85-90		Helpful	No advantage	Remove decayed fruit
Parsnips	32	90-95		Helpful	Yes	Moisten roots only
Peaches, Ripe	31-32	90	Yes	Helpful	No	Ripen at room temperature before storage
Pears	29-31	90-95	Yes	Helpful	No	Display in single or double layer on pads
Peas, Green	32	90-95	Yes	Profitable	Yes	Shake up to aerate, Keep cold
Peppers	45-50	90-95	Yes	Profitable	Yes	
Pineapples, Ripe	45-55	85-90	Yes	No	No	Remove decayed fruit
Plums	31-32	90-95	Yes	Helpful	No	Remove decayed fruit
Potatoes	40-50	85-90		No	No	Keep out of sun
Radishes	32	90-95	Yes	Profitable	Yes	Keep water off tops, avoid tight packing
Rhubarb	32	90-95	Yes	Profitable	No	Trim thin slice off stems and stand in cold water
Squash, Summer	40-50	85-95	Yes	Helpful	Yes	
Squash, Winter and Pumpkins	50-55	50-75		No	No	
Spinach	32	90-95	Yes	Profitable	Yes	Keep ventilated
Sweet Potatoes	55-60	85-90		No	No	Keep ventilated
Tangerines	32	85-90	Yes	Profitable	Yes	Remove decayed fruit
Tomatoes, Ripe	45-50	85-90	Yes	Helpful	No	Sell quickly, refrigerate if necessary to hold
Tomatoes, Green	55-70	85-90		No	No	Ripen in back room, sort frequently
Turnips	32	90-95		Profitable	Yes	Sprinkle roots only
Watermelons	40-50	80-85		Helpful	No	Cover cut melons with transparent film

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Produce	Ideal Storage Conditions		Sell Quickly (1-2 Days)	Care in the Display Rack		
	Temperature (°F.)	Relative Humidity (%)		Refrigerate (40 F.)	Sprinkle With Water	Special Notes
Apples	30-32	85-95		Helpful	No Advantage	Avoid Bruising
Apricots	31-32	85-90	Yes	Helpful	No	
Asparagus	32-36	90-95	Yes	Profitable	No	Trim butts and stand in ice or shallow water
Avocados	40-55	85-90	Yes	No	No	Display on padded surface
Bananas, Ripe	56-58	85-90	Yes	No	No	Display on padded surface
For Ripening	58-68	90-95		No	No	Avoid Bruising
Beans Lima	32-40	85-90	Yes	Profitable	No	Shake up to aerate
Beans, Snap	40-45	90-95	Yes	Profitable	Yes	
Beets	32	85-95	Yes	Profitable	Yes	Moisten roots only
Berries	31-32	90-95	Yes	Helpful	No	Keep well ventilated
Broccoli	32-35	90-95	Yes	Profitable	Yes	Keep out of sun
Brussels Sprouts	32-35	90-95	Yes	Profitable	Yes	Remove yellow leaves
Cabbage	32	90-95		Helpful	Yes	
Carrots	32	90-95		Profitable	Yes	Moisten roots only of bunches
Cauliflower	32	90-95	Yes	Profitable	Yes	Sprinkle only if refrigerated
Celery	31-32	90-95	Yes	Profitable	Yes	
Cherries	31-32	90-95	Yes	Helpful	No	Keep well ventilated
Corn, Sweet	31-32	90-95	Yes	Profitable	Yes	Keep cold to keep sweetness
Cucumbers	45-50	90-95	Yes	No	No Advantage	
Eggplants	45-50	85-90	Yes	No	No advantage	Do not bruise, keep off ice
Grapefruit	50-60	85-90		Helpful	No advantage	Remove decayed fruit
Grapes	30-32	85-95	Yes	Helpful	No	Keep well ventilated
Honeydews	45-50	85-90		Helpful	No	
Lemons	38-40	85-90		Helpful	Yes	Sprinkling may be helpful
Lettuce	32	90-95	Yes	Profitable	Yes	Avoid soaking with water
Limes	48-50	85-90		Helpful	No advantage	
Mushrooms	32-35	80-90	Yes	Helpful	No	Handle carefully, keep dry
Muskmelon, Full						
Slip	32-35	85-90	Yes	Helpful	No	
Onions, Dry	32	65-70		No	No	Remove loose wrappers, keep dry

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